In the outer case, also, is a clamping-screw, which bears against the rim of the inner lantern, and by which the latter, after being adjusted to shew the required light or signal, can be fixed, till a change is rendered necessary.

Mr. Pearce's lantern is not a mere speculation or project, but has actually been brought by him into use; for in three months he has supplied above a hundred lanterns,—a fact shewing at the same time the laudable activity of the inventor, and the utility of his invention to those professionally conversant with the subject.

No. XII.

INDIAN SWORD-BLADES.

The Thanks of the Society were voted to Capt. BAGNOLD, R.M., of Blackheath Villa, Saxmundham, for the following account of the Manufacture and Tempering of Sword-Blades in the province of Cutch, from information communicated to him by his brother, Lieut.-Colonel Bagnold, late President of the Regency in Cutch.

THESE swords are celebrated throughout India for their peculiar strength and edge, and are thus made:—An inch bar of fine Swedish or English steel is forged out into plates seven inches long, one inch broad, and one-sixth of an inch thick. Similar bars of fine, soft iron are prepared in the same manner. These are smeared with

a paste of borax dissolved in water, and laid in piles of twelve—nine of steel to three of iron, or three to one, alternately: each pile is wrapped round with rag thickly plastered with mud made of a loamy earth; then heated, welded, and drawn out to a bar one inch and one-eighth broad, and one-third of an inch thick: this is bent zig-zag three or four times; is again welded and drawn out to half an inch thick; and, during the heat, borax is frequently dropped on the metal while in the fire. Two of these bars are next welded into one, and, when about twelve or fourteen inches long, it is bent into the form of a loop or staple; in the middle of this a piece of fine-grained file is inserted, of the same width, and nearly as thick: all is then welded together, and the blade is formed.

Tempering.

An earthen pot, twelve inches wide and six deep, is notched on the edges (the notches being opposite each other), with a file, about a quarter of an inch deep, and is then filled nearly up to the notches with water, and oil is then poured on the surface. The blade, being heated equally to a light red, is removed from the fire, and the point, entered into the notch on one edge, is passed to the opposite one, keeping the edge from a quarter to half an inch in the oil: it is drawn backwards and forwards rather slowly till the hissing ceases and the rest of the blade above the fluid has become black; a jug of water without oil is then poured along the blade from heel to point. In order to take out the warp produced by tempering, the blade, when nearly cold, is passed over the fire three or four times; then being brought to the anvil, is set straight by striking it regularly, but moderately, with a hammer; by

this means a Damascus-curved blade may be brought nearly straight. Blades made this way, in my brother's presence, when he was President of the regency in Cutch, were proved, previous to grinding, by striking at stones, ramrods, musket-barrels, and even wheel-tires, without injury to the edge.

T. M. Bagnold.

No. XIII.

FINE ADJUSTMENT FOR THE STAGE OF A MICROSCOPE.

The Silver Isis Medal was presented to Mr. Hugh Powell, 24 Clarendon-street, Somers' Town, for his fine Adjustment for the Stage of a Microscope; a Model of which has been placed in the Society's Repository.

This movement is applicable to any microscope, but, applied to one with a rack and pinion, the two give, with much simplicity, and in small compass, all that can be wanted in the adjustment of objects to the focus of the magnifying power. A rack and pinion (such as is now used) of forty teeth to an inch, will move the objects quick enough for low powers, and slow enough to bring objects in sight for the highest powers: then this very fine movement will give the most perfect adjustment, and this being